George Washington Carver Engineering and Science High School 2019 Summer Enrichment

Science - Mr. Leed

This summer project charges you with three major tasks that entail multiple aspects of the scientific process. Every incoming 7th grade student must complete both activities and the overall review of them for your summer project. This summer project will be the equivalent to a test grade in the 1st quarter of the school year.

Before you begin this project, provide your *hypotheses* for the following prompts:

i. Do you think five ice cubes will take five times as long to melt as one single ice cube?
ii. Does water actually move?
iii. Do heavier objects fall faster than lighter objects?
Iv. Does shape have an effect on the rate at which objects fall?

(1) Transforming Ice to Gas

In this activity, you will take a single ice cube, place it into an empty pot at room temperature and record (A) the time it takes to melt in seconds, and (B) overall observations, including the size and shape of the ice cube and the changes it undergoes during the *melting* process. Next, you will turn on the stove, with help from an adult. During this time, you will (C) record the time it takes to boil in seconds, and (D) overall observations, including any visible motion you see. Repeat steps A-D, with any number of ice cubes greater than 1, of your choosing. Be sure to indicate the number of ice cubes you use for the second trial.

(2) Dropping Objects with Different Weights and Designs

In this activity, you will drop 5 objects: (1) an un-crumpled flat piece of paper, (2) a crumpled piece of paper, (3) 1 penny, (4) 10 pennies taped together, and (5) any fifth nonliving object of your choosing. Each object should be dropped from the same height, about 6 feet high. You will need to use a stopwatch, which can be conveniently found on smartphones. You need to collect the following information for each object:

a. The *exact* height that you used (within reason); this height *needs* to be the same for all objects
b. The *exact* time that it took the object to hit the ground after dropping (within reason)
c. Repeat each drop trial five times for each object

After collecting/recording information from your drop trials, complete the following prompts for each object:

a. Find the mean (average) time for each object (and show your work!)
b. Comment/discuss and describe any discrepancies with the object drop times

(3) Review of Hypotheses

After you complete activities (1) and (2), go back to your original hypotheses from the start of the summer project. Write a 1 paragraph discussion on why (or why not) your hypotheses matched your experimental data. Be as specific as possible!

7th Grade Science Supply List

(1) A notebook/binder for you to take notes. I will not collect or grade this notebook. The notebook is for you and your notes. The specific notebook/binder is up to you, but you must simply have a notebook/binder with you in class every day. Keeping yearlong notebook will help you with your learning.
(2) A folder to store handouts/assignments/labs/old assessments.
(3) A pencil. Mechanical pencils are preferred but not mandatory. Plan on carrying several pencils with you to every class.
(4) A calculator. For science class, the calculator must simply be a "scientific calculator" with capabilities beyond addition/subtraction/multiplication/division. You'll need a graphing calculator (TI-84 Plus) for high school math, but are not required to have that for 7th-grade science. I personally use a TI-36 calculator in class. It's cheaper but does the job. Whatever calculator you decide on and purchase, be sure to engrave your name on it as 7th graders can sometimes leave possessions behind.

DUE ON FIRST DAY OF SCHOOL, SEPTEMBER 3RD